Exelon Generation®

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10 CFR 50.73

RA14-042

October 3, 2014

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

LaSalle County Station, Unit 2
Facility Operating License No. NPF-18
NRC Docket No. 50-374

Subject: Licensee Event Report 2014-001-00 Reactor Scram Due to Main Steam Isolation Valve Stem-Disk Separation

In accordance with 10 CFR 50.73(a)(2)(iv)(A), Exelon Generation Company (EGC), LLC, is submitting Licensee Event Report Number 2014-001-00 for LaSalle County Station Unit 2.

There are no regulatory commitments in this letter. Should you have any questions concerning this report, please contact Mr. Guy V. Ford, Regulatory Assurance Manager, at (815) 415-2800.

Respectfully,

Harold T. Vinyard
Plant Manager
LaSalle County Station

Enclosure: Licensee Event Report

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – LaSalle County Station

NRC FORM 366 (02-2014) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/2017

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

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4. TITLE

Reactor Scram Due to Main Steam Isolation Valve Stem-Disk Separation

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	N/A
08	05	2014	2014	- 001	- 00	10	03	2014	FACILITY NAME: N/A	DOCKET NUMBER: N/A

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
100	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT	TELEPHONE NUMBER *(Include Area Code)*
Bill Hilton, Senior Manager, Design Engineering	(815) 415-3912

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
E	SB	ISV	R344	Y					

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO				

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On August 5, 2014, at approximately 1734 hours CDT, Unit 2 automatically scrammed from 100% power on high neutron flux, followed by a Group I containment isolation. Following the Group I isolation, the control room operators noted that the position indication for valve 2B21-F022C, the inboard 2C Main Steam Isolation Valve (MSIV), showed dual indication rather than full closed.

Troubleshooting of the 2C MSIV determined that the valve stem disk had separated from the stem, which allowed the main disk to drop into the main steam flow path. The resulting reactor pressure transient added positive reactivity, which caused the high neutron flux scram. Increased steam flow in the other three main steam lines resulted in a nearly simultaneous high main steam line flow Group I containment isolation.

The cause of the stem-disk separation on the 2C MSIV was fretting wear attributable to marginal design. The root cause of the event was a legacy decision made in 2008 deferring installation of a manufacturer upgrade that would have prevented the failure. Corrective actions include installing the upgrade on all MSIVs on both units, and reviewing previous deferral decisions made using the same decision-making process.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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NARRATIVE

LaSalle County Station Unit 2 is a General Electric Company Boiling Water Reactor with 3546 Megawatts Rated Core Thermal Power.

A. CONDITION PRIOR TO EVENT:

Unit(s): 2 Event Date: August 5, 2014 Event Time: 1734 CDT
Reactor Mode(s): 1 Mode(s) Name: Power Operation Power Level: 100%

B. DESCRIPTION OF EVENT:

On August 5, 2014, at approximately 1734 hours CDT, Unit 2 automatically scrammed from 100% power on high neutron flux, followed by a Group I containment isolation. Following the Group I isolation, the control room operators noted that the position indication for valve 2B21-F022C, the inboard 2C Main Steam Isolation Valve (MSIV)[SB], showed dual indication rather than full closed.

Troubleshooting of the 2C MSIV determined that the valve stem disk had separated from the stem, which allowed the main disk to drop into the main steam flow path. The resulting reactor pressure transient added positive reactivity, which caused the high neutron flux scram. Increased steam flow in the other three main steam lines resulted in a nearly simultaneous high main steam line flow Group I containment isolation.

This occurrence is reportable under 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in the automatic actuation of any of the systems listed in 10 CFR 50.73(a)(2)(iv)(B). An ENS report was made to the NRC (EN# 50346) at 2120 CDT on August 5, 2014, pursuant to 10CFR 50.72(b)(2)(iv)(B) and 50.72(b)(3)(iv)(A).

This event constitutes an unplanned scram with complications in accordance with NEI 99-02, Revision 7.

C. CAUSE OF EVENT:

The cause of the stem-disk separation on the 2C MSIV was fretting wear attributable to marginal design. A formal root cause investigation was conducted, which determined that the root cause of the event was a legacy decision made in 2008.

The vulnerability of the Rockwell International MSIV to stem-disk separation was a known issue. In 1989, Rockwell developed an "MSIV Improvement Package" with a more robust stem-disk design configuration. The station initially planned to install this upgrade on all 16 MSIVs (two Units with four inboard and four outboard MSIVs each); however, based upon the results of inspections performed on several MSIVs, the upgraded design was installed on only seven before it was decided to defer the remaining nine installations until additional corrective maintenance work was required. This decision was made in 2008 using the Operational and Technical Decision Making (OTDM) process.

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NARRATIVE

D. SAFETY ANALYSIS:

The safety significance of this event was minimal. A reactor scram with closure of the MSIVs is an analyzed event. Reactor pressure control was maintained using reactor core isolation cooling and the safety relief valves. Reactor level control was maintained with the feedwater system initially and then with use of the Low Pressure Core Spray (LPCS) system. High pressure core spray was operable throughout the event. The normal heat sink through the main condenser could have been re-established by resetting the Group I containment isolation signal and opening the MSIVs in one main steam line. The main turbine bypass valves could then be opened as necessary to transfer decay heat to the main condenser.

E. CORRECTIVE ACTIONS:

- The upgraded design was installed in the four remaining Unit 2 inboard MSIVs. This was completed in August 2014 during the forced outage following the event.
- The upgraded design will be installed in the five remaining Unit 1 MSIVs that still have the vulnerable stem-disk assembly.
- Previous decisions that used the OTDM process to defer installation of a configuration change intended to mitigate High and Medium consequence issues will be reviewed using the Nuclear Risk Management Process implemented on 7/9/14. The Nuclear Risk Management Process is a consistent process to evaluate and manage risk across a broad range of potential risks including the Operational Decision Making process (former OTDM process). This process addresses issues identified in the root cause investigation associated with the 2008 decision to defer the upgraded design for the MSIVs. Those issues included assessment of degradation rates and the review and verification that input data for decision making is complete and accurate.

F. PREVIOUS OCCURRENCES:

There have been no previous occurrences of an MSIV stem-disk separation at LaSalle.

G. COMPONENT FAILURE DATA:

Rockwell – Edward Flite Flow Balanced Stop Valve, 26 inch, Model 1612